

Applicants : Ryan D. Tasma, David H. Cotter and Ronald C. Ehlert
Serial No. : 10/710,809
Page : 2

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the present application:

1 (canceled).

2 (previously presented): The roller conveyor of claim 17, wherein said first self-driven roller is positioned generally beneath said idler rollers.

3 (previously presented): The roller conveyor of claim 17, wherein said idler rollers are positioned generally orthogonal to said sidewalls.

4 (previously presented): The roller conveyor of claim 2, wherein said first self-driven roller is positioned generally orthogonal to said idler rollers.

5 (previously presented): The roller conveyor of claim 17, wherein said idler rollers are skewed with respect to said sidewalls to convey articles partially toward one of said sidewalls.

6 (previously presented): The roller conveyor of claim 5, wherein said first self-driven roller is positioned generally parallel to said sidewalls.

7 (previously presented): The roller conveyor of claim 17, wherein said plurality of drive members comprises at least three drive members and wherein said plurality of idler rollers comprises at least three idler rollers.

8 (previously presented): The roller conveyor of claim 17, wherein said roller conveyor includes a plurality of zones, each of said zones including a transverse drive unit and respective self-

Applicants : Ryan D. Tasma, David H. Cotter and Ronald C. Ehlert
Serial No. : 10/710,809
Page : 3

driven rollers operable to independently and rotatably drive a plurality of said idler rollers of said respective zone.

9 (original): The roller conveyor of claim 8 including at least one article sensor operable to detect articles on said roller conveyor.

10 (original): The roller conveyor of claim 9, wherein said at least one transverse drive unit is selectively activatable in response to said at least one article sensor to accumulate articles on said idler rollers.

11 (previously presented): The roller conveyor of claim 17, wherein said at least one transverse drive unit is selectively activatable to selectively rotatably drive said idler rollers.

12 (previously presented): The roller conveyor of claim 17, wherein said at least one transverse drive unit is selectively activatable to rotatably drive said idler rollers in either direction.

13-16 (canceled).

17 (previously presented): A roller conveyor comprising:

a first conveyor section comprising:

a pair of opposite sidewalls;

a plurality of idler rollers mounted to said sidewalls and arranged to convey articles along said first conveyor section in a first direction of conveyance;

a transverse drive system having at least one transverse drive unit comprising:

a first self-driven roller positioned along one of said sidewalls and generally transverse to said idler rollers, said first self-driven roller comprising an internal motor operable to rotate a roller portion of said first self-driven roller relative to an axle portion of said first self-driven roller; and

Applicants : Ryan D. Tasma, David H. Cotter and Ronald C. Ehlert
Serial No. : 10/710,809
Page : 4

a plurality of drive members, said drive members being engaged with said roller portion of said first self-driven roller, each of said drive members drivably connecting said first self-driven roller and a respective one of said idler rollers, wherein actuation of said first self-driven roller drives said idler rollers via the respective drive members to convey articles in said first direction of conveyance;

a right angle transfer unit at said first conveyor section, said right angle transfer unit having a plurality of belts that are selectively raisable between at least some of said idler rollers and drivable to convey articles in a direction generally normal to said first direction of conveyance of said idler rollers, said belts being mounted to a movable portion that is vertically movable relative to said sidewalls between a lowered position, where a conveying surface of said belts is positioned below a conveying surface of said idler rollers, and a raised position, where said conveying surface of said belts is positioned above said conveying surface of said idler rollers;

wherein said movable portion of said right angle transfer unit is vertically movable via a rotational drive member, whereby rotation of said drive member causes translational movement of a camming member, which causes vertical movement of said movable portion relative to a mounting base of said right angle transfer unit, said rotational drive member being rotated via a rotational drive motor, wherein said camming member comprises a roller that rolls along a generally horizontal slot at said mounting base and an angled slot at said movable portion in response to rotation of said drive member; and

wherein said right angle transfer unit comprises a second self-driven roller having an internal motor operable to rotatably drive a roller portion relative to an axle portion of said second self-driven motor, said second self-driven roller being mounted at said movable portion and arranged generally parallel to said first self-driven roller, said second self-driven roller and said first self-driven roller being independently operable; and

a second conveyor section comprising a pair of opposite sidewalls and a plurality of rollers mounted to opposite sidewalls, said second conveyor section being positioned adjacent to said first conveyor section, said plurality of rollers being rotatably driven via a third self-driven

Applicants : Ryan D. Tasma, David H. Cotter and Ronald C. Ehlert
Serial No. : 10/710,809
Page : 5

roller, said third self-driven roller of said second conveyor section and said first self-driven roller of said first conveyor section being independently operable to convey articles in said first direction of conveyance.

18 (previously presented): The roller conveyor of claim 17, wherein said rotational drive member comprises a toothed drive pinion that engages corresponding teeth of said camming member.

19 (currently amended): A roller conveyor comprising:

a pair of opposite sidewalls;

at least two tandem zones, each of said at least two tandem zones comprising a plurality of idler rollers mounted to said sidewalls, said idler rollers being arranged so as to convey articles along said tandem zones in a direction of conveyance that is generally along said sidewalls and from an upstream tandem zone to a downstream tandem zone, each of said at least two tandem zones further comprising an article sensor for sensing articles being conveyed along the respective zone via said idler rollers; and

a transverse drive system comprising a transverse drive unit at each of said at least two tandem zones, wherein each of said transverse drive units comprises a motorized roller positioned generally transverse to said plurality of idler rollers and a plurality of drive members connected between said motorized roller and at least some of said plurality of idler rollers, each said motorized roller having an internal motor that is operable to rotate a roller portion of said motorized roller relative to an axle portion of said motorized roller, said motorized rollers of said at least two tandem zones being independently operable to drive said drive members to rotatably drive said at least some of said plurality of rollers of the respective ones of said at least two tandem zones, said motorized rollers being independently operable in response to respective ones of said article sensors.

20 (canceled).

Applicants : Ryan D. Tasma, David H. Cotter and Ronald C. Ehlert
Serial No. : 10/710,809
Page : 6

21 (currently amended): A The roller conveyor of claim 19 comprising:
a pair of opposite sidewalls;
at least two tandem zones, each of said at least two tandem zones comprising a plurality
of idler rollers mounted to said sidewalls, each of said at least two tandem zones further
comprising an article sensor for sensing articles being conveyed along the respective zone via
said idler rollers; and
a transverse drive system comprising a transverse drive unit at each of said at least two
tandem zones, wherein each of said transverse drive units comprises a motorized roller
positioned generally transverse to said plurality of idler rollers and a plurality of drive members
connected between said motorized roller and at least some of said plurality of idler rollers, each
said motorized roller having an internal motor that is operable to rotate a roller portion of said
motorized roller relative to an axle portion of said motorized roller, said motorized rollers of said
at least two tandem zones being independently operable to drive said drive members to rotatably
drive said at least some of said plurality of rollers of the respective ones of said at least two
tandem zones, said motorized rollers being independently operable in response to respective ones
of said article sensors, wherein said transverse drive system is operable to accumulate articles on
said rollers of said tandem zones in response to said article sensors.

22 (previously presented): The roller conveyor of claim 19 further comprising a control, said control being operable to activate and deactivate said internal motor of said motorized roller of each of said zones in response to a respective article sensor.

23 (original): The roller conveyor of claim 19, wherein said motorized roller is positioned generally beneath said idler rollers.

24 (original): The roller conveyor of claim 19, wherein said idler rollers are positioned generally orthogonal to said sidewalls.

Applicants : Ryan D. Tasma, David H. Cotter and Ronald C. Ehlert
Serial No. : 10/710,809
Page : 7

25 (original): The roller conveyor of claim 24, wherein said motorized roller is positioned generally orthogonal to said idler rollers.

26 (currently amended): A The roller conveyor of claim 19 comprising:

a pair of opposite sidewalls;

at least two tandem zones, each of said at least two tandem zones comprising a plurality of idler rollers mounted to said sidewalls, wherein said idler rollers are skewed with respect to said sidewalls to convey articles partially toward one of said sidewalls, each of said at least two tandem zones further comprising an article sensor for sensing articles being conveyed along the respective zone via said idler rollers; and

a transverse drive system comprising a transverse drive unit at each of said at least two tandem zones, wherein each of said transverse drive units comprises a motorized roller positioned generally transverse to said plurality of idler rollers and a plurality of drive members connected between said motorized roller and at least some of said plurality of idler rollers, each said motorized roller having an internal motor that is operable to rotate a roller portion of said motorized roller relative to an axle portion of said motorized roller, said motorized rollers of said at least two tandem zones being independently operable to drive said drive members to rotatably drive said at least some of said plurality of rollers of the respective ones of said at least two tandem zones, said motorized rollers being independently operable in response to respective ones of said article sensors.

27 (original): The roller conveyor of claim 26, wherein said motorized roller is positioned generally parallel to said sidewalls.

28 (original): The roller conveyor of claim 19, wherein said plurality of drive members comprises at least three drive members.

Applicants : Ryan D. Tasma, David H. Cotter and Ronald C. Ehlert
Serial No. : 10/710,809
Page : 8

29 (currently amended): A The roller conveyor of claim 19 including comprising:
a pair of opposite sidewalls;
at least two tandem zones, each of said at least two tandem zones comprising a plurality
of idler rollers mounted to said sidewalls, each of said at least two tandem zones further
comprising an article sensor for sensing articles being conveyed along the respective zone via
said idler rollers;
a transverse drive system comprising a transverse drive unit at each of said at least two
tandem zones, wherein each of said transverse drive units comprises a motorized roller
positioned generally transverse to said plurality of idler rollers and a plurality of drive members
connected between said motorized roller and at least some of said plurality of idler rollers, each
said motorized roller having an internal motor that is operable to rotate a roller portion of said
motorized roller relative to an axle portion of said motorized roller, said motorized rollers of said
at least two tandem zones being independently operable to drive said drive members to rotatably
drive said at least some of said plurality of rollers of the respective ones of said at least two
tandem zones, said motorized rollers being independently operable in response to respective ones
of said article sensors; and

a right angle transfer unit having a plurality of belts that are selectively raisable and drivable to convey articles in a direction generally normal to the direction of conveyance of said idler rollers.

30 (original): The roller conveyor of claim 29, wherein said belts are mounted to a movable portion that is vertically movable between a lowered position, where a conveying surface of said belts is positioned below a conveying surface of said idler rollers, and a raised position, where said conveying surface of said belts is positioned above said conveying surface of said idler rollers.

31 (original): The roller conveyor of claim 30, wherein said movable portion is vertically movable via a rotational drive member, whereby rotation of said drive member causes

Applicants : Ryan D. Tasma, David H. Cotter and Ronald C. Ehlert
Serial No. : 10/710,809
Page : 9

translational movement of a camming member, which causes vertical movement of said movable portion relative to a mounting base of said right angle transfer unit.

32 (original): The roller conveyor of claim 31, wherein said rotational drive member is rotated via a rotational drive motor.

33 (previously presented): A roller conveyor comprising:

a pair of opposite sidewalls;

at least two tandem zones, each of said at least two tandem zones including a plurality of idler rollers mounted to said sidewalls; and

a transverse drive system comprising a transverse drive unit at each of said at least two tandem zones, wherein each of said transverse drive units comprises a motorized roller positioned generally transverse to said plurality of idler rollers and a plurality of drive members connected between said motorized roller and at least some of said plurality of idler rollers, each said motorized roller having an internal motor that is operable to rotate a roller portion of said motorized roller relative to an axle portion of said motorized roller, said motorized rollers being independently operable to drive said drive members to rotatably drive said at least some of said plurality of rollers of the respective ones of said at least two tandem zones;

a right angle transfer unit having a plurality of belts that are selectively raisable and drivable to convey articles in a direction generally normal to the direction of conveyance of said idler rollers; and

wherein said belts are mounted to a movable portion that is vertically movable between a lowered position, where a conveying surface of said belts is positioned below a conveying surface of said idler rollers, and a raised position, where said conveying surface of said belts is positioned above said conveying surface of said idler rollers, said movable portion being vertically movable via a rotational drive member, whereby rotation of said drive member causes translational movement of a camming member, which causes vertical movement of said movable portion relative to a mounting base of said right angle transfer unit, wherein said camming

Applicants : Ryan D. Tasma, David H. Cotter and Ronald C. Ehlert
Serial No. : 10/710,809
Page : 10

member comprises a roller that rolls along a generally horizontal slot at said mounting base and an angled slot at said movable portion in response to rotation of said drive member.

34 (previously presented): The roller conveyor of claim 29, wherein said belts are drivable via a second motorized roller having an internal motor operable to rotatably drive a roller portion relative to an axle portion of said second motorized roller.

35-56 (canceled).

57 (previously presented): A right angle transfer unit positioned at a conveying section, said conveying section comprising:

opposite sidewalls and a plurality of rollers mounted to and between said sidewalls and defining a roller conveying surface for conveying articles in a first direction of conveyance;

a base portion generally fixedly positioned relative to said sidewalls;

a movable portion that is movable generally vertically relative to said base portion;

a plurality of belts, each of which is reeved around a plurality of wheels, said belts and said wheels being mounted to said movable portion and being movably positioned between respective adjacent rollers, said belts defining a belt conveying surface for conveying articles in a second direction of conveyance that is different from said first direction of conveyance;

a rotational drive motor operable to rotate a rotatable drive member, said rotatable drive member being rotatable to cause vertical movement of said movable portion relative to said base portion to raise said belts relative to said rollers such that said belt conveying surface is positioned above said roller conveying surface, said belts being driven to convey articles in said second direction of conveyance when said belts are raised; and

wherein said rotatable drive member engaging a lifting member such that rotation of said rotatable drive member causes a translational movement of a lifting member which in turn causes generally vertical movement of said movable portion relative to said base portion, wherein said lifting member moves along a camming surface of said mounting base and a camming surface of

Applicants : Ryan D. Tasma, David H. Cotter and Ronald C. Ehlert
Serial No. : 10/710,809
Page : 11

said movable portion, said camming surfaces being angled relative to one another such that movement along said camming surfaces causes generally vertical movement of said movable portion relative to said mounting base.

58 (previously presented): The right angle transfer unit of claim 57, wherein said belts are driven via at least one motorized roller having an internal motor operable to rotate a roller portion of said motorized roller relative to an axle portion of said motorized roller.

59 (original): The right angle transfer unit of claim 58, wherein said axle portion of said motorized roller is mounted to said movable portion.

60 (previously presented): The right angle transfer unit of claim 57, wherein said rotational drive motor is operable to selectively generally vertically move said movable portion between a lowered position, where said belt conveying surface is below said roller conveying surface, and a raised position, where said belt conveying surface is above said roller conveying surface.

61 (original): The right angle transfer unit of claim 60 including at least one biasing member that urges said movable portion toward said raised position.

62 (previously presented): The right angle transfer unit of claim 57, wherein said second direction of conveyance is generally normal to said first direction of conveyance.

63 (previously presented): The right angle transfer unit of claim 57, wherein said rotatable drive member comprises a toothed drive pinion that engages corresponding teeth of said lifting member.

64 (new): The roller conveyor of claim 19, wherein said motorized roller is positioned such that said axle portion is generally parallel to said sidewalls.